AMENDMENTS TO THE SPECIFICATION:

Please amend the specification as follows:

On page 1, amend the title as follows:

PIPETTE VERIFICATION DEVICE AND PIPETTE ~~FITTED WITH THE SAME~~

On page 1, after the title, please add the following paragraph:

This application is a national stage filing under 35 U.S.C. § 371 of International Application No. PCT/US2004/003824, filed on February 6, 2004, the disclosure of which is expressly incorporated herein by reference to its entirety.

On page 1, amend the heading above paragraph [0001] as follows:

~~Field of the Invention~~ Technical Field

On page 1, amend paragraph [0001] as follows:

The present ~~invention~~ disclosure relates to liquid dispensing systems capable of delivering, with great precision, very small volumes, typically from 1 nanoliter to several milliliters.

On page 1, amend paragraph [0002] as follows:

The ~~invention~~ present disclosure concerns, more particularly, a pipette verification device and a pipette fitted with the same.

On page 1, amend the heading above paragraph [0003] as follows:

Background ~~of the Invention~~

On page 1, amend paragraph [0004] as follows:

During operation, the piston is pushed down to its end position, the dispensing tip mounted at the end of the shaft is dipped into the liquid to be sampled, then the piston is moved up by a distance corresponding to the volume of liquid displayed on the counter. The upward movement of the piston causes the desired volume of liquid to be aspirated only into the tip, ~~said~~ the liquid being then able, via another downward movement of the piston, to be discharged into a target reserved ~~therefor~~ therefore.

On page 1, amend paragraph [0005] as follows:

Pipettes of this type, both manual and motorized, are disclosed, for example, in ~~US Patents 5 983 733, 6 170 343 and 6 254 832~~ U.S. Patent Nos. 5,983,733, 6,170,343 and 6,254,832. Multishaft pipettes are also disclosed, for example, in ~~US Patents 4 779 467 and 5 456 879~~ U.S. Patent Nos. 4,779,467 and 5,456,879.

On page 1, amend paragraph [0006] as follows:

According to the requirements of the "Good Laboratory and Manufacturing Processes" applied to pipettes, monitoring and recording measures should be taken regarding the volume of liquid dispensed. Malfunction of a pipette means that all the

tests carried out with the instrument may have to be reconsidered, which constitutes an expensive operation.

On page 1, amend paragraph [0007] as follows:

Moreover, the quality of a pipette's performance may necessarily ~~falls~~ fall off over time. After a certain number of operations, each pipette ~~has~~ may have to undergo a preventive maintenance procedure. Operators thus have not only to determine after how many pipetting operations such maintenance has to be carried out, but may also keep pipette calibration records.

On page 1, amend paragraph [0008] as follows:

Finally, account ~~has~~ may have to be taken of the fact that the accuracy of the pipette also depends on the operator, who may be more or less skilled and who determines the temperature of the instrument, which influences the volume of aspirated air.

On page 2, amend paragraph [0009] as follows:

It is an object of the present ~~invention~~ disclosure to meet the quality control requirements that have just been mentioned.

On page 2, amend paragraph [0010] as follows:

More precisely, the ~~invention concerns~~ present disclosure relates to a verification device for a pipette with a piston for aspirating then dispensing, using a shaft, a determined volume of liquid. This device ~~essentially includes~~ may include:

[[-]]first means for supplying a displaced volume measurement, comparing this measurement to a desired value and generating an indication of the difference between the measured volume and ~~said~~ the desired value; and

[[-]]second means, responding to ~~said~~ the first means, for delivering an information relating to ~~said~~ the indication.

On page 2, amend paragraph [0011] as follows:

The device defined hereinbefore may also ~~has~~ include one or more of the following main features:

[[-]]~~Said~~ the first means may include a sensor capable of supplying a pressure measurement at two points of the shaft, and a microprocessor programmed to calculate, from this measurement, the volume displaced in the shaft, to verify that this volume corresponds to the desired volume value and to generate an indication relating to ~~said~~ the verification~~.~~;

[[-]]~~The~~ the sensor ~~is~~ may be capable of supplying, in addition, a measurement of the temperature in the shaft~~.~~;

[[-]]~~Said~~ the second means may include a display and, preferably, an acoustic alarm~~.~~;

[[-]]~~Said~~ the second means may include a transceiver capable of making the microprocessor communicate with a control and recording unit~~.~~;

[[-]]~~The~~ the microprocessor ~~is~~ may be programmed to store instructions that are sent thereto by ~~said~~ the unit and to send thereto information concerning the difference between the measured volume and the desired value~~.~~;

[[-]]~~If~~ if the device is intended for a pipette whose piston is actuated by a motor, the microprocessor ~~is~~ may be programmed to control ~~said~~ the motor such that the aspirated volume corresponds to the desired value~~.~~;

[[-]]~~The~~ the device ~~is~~ may be a module that can be fitted to an existing pipette.

On page 2, amend paragraph [0012] as follows:

The ~~invention~~ present disclosure also ~~concerns~~ relates to a pipette integrating a verification device as previously defined.

On page 2, amend paragraph [0013] as follows:

The ~~invention finally concerns~~ present disclosure further relates to a control and recording unit for managing a plurality of pipettes fitted with the verification device disclosed hereinbefore. This unit ~~includes~~ may include a computer that can be reduced, more simply, to a microprocessor device dedicated to this function, and a transceiver capable of making the computer communicate with the transceiver of each of the pipettes.

On page 3, amend paragraph [0014] as follows:

Advantageously, the computer of this unit ~~is~~ may be programmed such that the following operations are carried out:

[[-]]sending the protocol of the pipetting operations to be carried out to each pipette;

[[-]]recording the performance of each pipette;

[[-]]recording the performance of the operator; and

[[-]]guiding the operator during a series of pipetting operations.

On page 3, amend paragraph [0015] as follows:

Other features and advantages of the present ~~invention~~ disclosure will appear from the following description, made with reference to the annexed ~~drawing~~ drawings, in which:

[[-]]Figure 1 is a schematic diagram of ~~a~~ an exemplary pipette according to one aspect of the ~~invention~~ present disclosure, and the control and recording unit to which it is connected;

[[-]]Figure 2 shows ~~the~~ exemplary programming logic of the pipette and the unit according to another aspect of the present disclosure; and

[[-]]Figure 3 illustrates an alternative embodiment of the mechanical part of the pipette of Figure 1, according to yet another aspect of the present disclosure.

On page 3, amend paragraph [0016] as follows:

The pipette shown in Figure 1 ~~includes, in a conventional manner,~~ may include a cylindrical chamber 10 into which a manually actuated piston 11 can slide. A seal 12 ~~seals~~ may seal the contact between cylinder 10 and piston 11. Cylinder 10 ~~is~~ may be extended, at its base, by a shaft 13, whose end ~~is~~ may be provided with a removable

conical dispensing tip 14. The shaft 13 may contain a working fluid, which may include air, but which may also include a liquid. Finally, a counter 15 ~~allows~~ may allow the operator to determine the volume of liquid to be dispensed. The travel of piston 11 will thus be automatically determined to follow this instruction.

On page 3, amend paragraph [0018] as follows:

The peculiarity of this pipette lies in the fact that it ~~is~~ may be provided with a verification module 16, which, in the example shown, occupies the extension of cylinder 10 and ~~includes~~ may include:

[[-]]a sensor 17 for supplying ~~an air or any other fluid~~ a pressure measurement of the working fluid at two points of shaft 13 and a measurement of its temperature;

[[-]]a microprocessor 18 supplying, from ~~said~~ the measurements, an indication of the volume of liquid aspirated into~~–~~or dispensed by~~–shaft 13~~ tip 14, verifying that this volume corresponds to the desired volume and generating an indication relating to ~~said~~ the verification;

[[-]]a communication interface 19 with the operator, which includes an LCD display 20, an acoustic alarm 21, a control button 22 and a transceiver 23~~,~~; and

[[-]]a battery or accumulator 24 used to supply electric power to the module.

On page 4, amend paragraph [0019] as follows:

Sensor 17 ~~essentially includes~~ may include two chambers inserted in series, via a fluid restrictor, on the path of the fluid that flows into the shaft and provided with an elastically deformable wall. Two electromechanical transducers respectively associated

with the elastic wall of each chamber may supply an electric signal representative of the pressure prevailing therein. A temperature sensor ~~is~~ may be arranged in proximity to the restrictor. This device ~~is~~ may be implemented in accordance with that disclosed in document WO 02/071001 to which reference can be made for a complete description.

On page 4, amend paragraph [0020] as follows:

Finally, transceiver 23 ~~communicates~~ may communicate, at short distance, outside the pipette, with another transceiver 25 associated with a computer 26, which form a central control and recording unit capable of managing a plurality of pipettes. The word "computer" used in the present document can also designate any microprocessor device dedicated to the unit. The communication function between the pipettes and the central unit ~~is~~ may be achieved by any appropriate means known to those skilled in the art, such as hard-wired, infrared or radio (IEEE 802.15 or Bluetooth) transmissions.

On page 4, amend paragraph [0021] as follows:

According to one aspect of the present ~~invention~~ disclosure, verification module 16 can either form an integral part of the pipette, or be added to a conventional existing pipette. In the first case, only sensor 17 has to be placed along shaft 13, the other components being able to be incorporated in the body of the pipette and interconnected by any means available to those skilled in the art. In the second case, module 16 can either be inserted between the end of shaft 13 and its tip 14, or be incorporated in an assembly linking together piston 11 and shaft 13.

On page 4, amend paragraph [0023] as follows:

When the operator wishes to carry out a series of liquid sampling and deposits, he ~~begins~~ may begin, at 27, on computer 26, by identifying himself and indicating the time and date of his intervention, then by specifying, for example, the following parameters:

[[-]]the type and identification number of the pipette;

[[-]]the dispensing protocol: number and volume of deposits to be carried out;

[[-]]the accepted tolerances.

On page 5, amend paragraph [0025] as follows:

Once the identified pipette has been switched on using control button 22, the command can be given, at 28, to start operations. Computer 26 may then ~~sends~~ send the necessary instructions to the pipette, at 29.

On page 5, amend paragraph [0026] as follows:

These instructions ~~are~~ may be received, at 30, by microprocessor 18 of the pipette, which ~~is~~ may then be ready to operate.

On page 5, amend paragraph [0027] as follows:

After having adjusted counter 15 to the value of the volume to be dispensed, the operator then~~, in a conventional manner, takes~~ may take a sample of the liquid, which takes place, by aspiration, in tip 14 of the pipette.

On page 5, amend paragraph [0028] as follows:

During this operation, microprocessor 18 ~~receives~~ may receive from sensor 17 signals representative of the temperature and pressures in its two chambers. These three items of information allow it to calculate, at 31, the fluid flow rate into shaft 13, then, by integration, the volume of liquid aspirated into its tip 14.

On page 5, amend paragraph [0029] as follows:

The next operations ~~are~~ may include, at 32, comparison of the measured volume with the desired value received from the computer, then, at 33, display on LCD 20 of a message indicating that the aspirated volume is–or is not–within the imposed tolerance limits.

On page 5, amend paragraph [0030] as follows:

If the desired value has been respected, the operator can then actuate his pipette to eject the liquid into the target intended ~~therefor~~ therefore. If, conversely, the desired value has not been respected, acoustic alarm 21 ~~is~~ may be actuated.

On page 5, amend paragraph [0031] as follows:

Microprocessor 18 may also ~~sends~~ send to the computer, at 34, the result of the comparison, which ~~is~~ may be received at 35 then processed, at 36, so as to carry out a quality check in accordance with the rules of the "Good Laboratory and Manufacturing Processes".

On page 5, amend paragraph [0033] as follows:

The next operation, at 37, ~~is~~ may be to determine whether the operation is a success or failure.

On page 6, amend paragraph [0034] as follows:

In the event of a failure, computer 26 ~~sends~~ may send the pipette, at 38, the command, received at 30, to remedy the defect that caused the failure and to take another sample of liquid.

On page 6, amend paragraph [0035] as follows:

When the operation has been successful, computer 26 ~~determines~~ may determine, at 39, whether the operations defined in the protocol have finished.

On page 6, amend paragraph [0036] as follows:

If this is not the case, computer 26 ~~sends~~ may send the pipette, at 40, the command, received at 30, to continue operations. If, conversely, the protocol has finished, the computer ~~returns,~~ may return to 27 to begin a new series of liquid sampling and deposits.

On page 6, amend paragraph [0037] as follows:

In the case of a pipette whose piston is driven by an actuator, such as a motor, the pipette microprocessor 18 may optionally use the result of its comparison 32

between the measured volume and the desired value to carry out, at 41, enslavement of the actuator which ~~will thus~~ may drive the piston such that its travel allows the volume of liquid imposed by the desired value to be aspirated.

On page 6, amend paragraph [0038] as follows:

Reference will be made, in conclusion, to the alternative embodiment of Figure 3 in which those elements common to those of Figure 1 are designated by the same reference numerals. In this case, piston 11 ~~is~~ may be extended by a portion of smaller diameter 42, which ~~slides~~ may slide into the upper part of shaft 13. Sealing ~~is~~ may then be achieved via a seal 43. This variant ~~gives~~ may give the pipette greater sensitivity to the movements of the piston.

On page 7, amend the heading as follows:

~~CLAIMS~~ WHAT IS CLAIMED IS: